Introduction

Definition

Technology transfer is the process by which existing knowledge, facilities, or capabilities developed under federal research and development (R&D) funding are utilized to fulfill public and private needs. Within the Air Force, the phrase "technology transfer" most often refers specifically to transfers occurring between the Air Force Research Laboratory (AFRL) or an Air Force product, logistic or test center, or other Air Force organization (i.e., Air Intelligence Agency, College of Aerospace Doctrine Research and Education, Air Combat Command, United States Air Force Academy, Air Force Weather Agency, etc.) and with non-federal organizations, including private industry, academia and state and local governments. In some cases, technology transfer also can occur between Federal agencies, although the primary emphasis is on transfer to all types of non federal organizations.

"The future of our modernization efforts will rely on the partnerships we form in the development and execution of our R&D programs, which in turn will enable tomorrow's warfighting superiority."

The Honorable Jacques S. Gansler
Undersecretary of Defense Acquisition, Technology and Logistics Testimony to the 106th Congress on 1 March 2000

It is important to note that technology transfer activities are not, by definition, only from the Air Force to another organization. There are occasions when technology transfer mechanisms can be used by the Air Force to bring in the required resources from the private sector that can assist the organization in achieving its mission. This might be an existing product already developed within the private sector that meets the Air Force organization's requirements.

Why Technology Transfer?

Since 1980, major legislative changes have been implemented to more fully optimize the private sector utilization of the research results and research capabilities of the federal laboratories. These changes were fueled by the realization that although the United States was a world leader in scientific research, we were lagging behind our allies in applying the fruits of our research. There are over 700 Federal laboratories employing more than 100,000 scientists and engineers in every area of science and technology. The FY 1999 federal budget of $1.73 trillion included $79.3 billion for R&D. Further breakdown shows $41.2 billion for defense and $38.1 billion for non-defense R&D.

According to the latest data from the National Institute of Standards and Technology (NIST), funds from all sources expended on R&D in the United States were estimated at more than $250 billion. Industrial firms with their own funds support approximately 65 percent of this R&D. The Federal government supports 30 percent. Academia, other nonprofit institutions, and state and local government provide the remainder. However, the federal government also funds 60 percent of the R&D performed by universities. Based on the total federal investment in R&D, Congress felt that the American taxpayers were not receiving sufficient dividends in terms of economic and social well being. This is why over the past twenty years there has been bipartisan support for continued legislative initiatives to improve technology transfer within the government.

As we begin the 21st century, our nation faces many political, economic and defense challenges. As in the past, the technologies developed by the Air Force will solve many of the national defense problems. However, many of the

technologies also have utility and application beyond the Air Force. Our country's industries, academia, and state and local government agencies can greatly benefit from sharing our technical knowledge and expertise.

The Air Force Materiel Command (AFMC) has an energized technology transfer process through a Technology Transfer Integrated Planning Team (TTIPT). See Section D for further explanation of the TTIPT process. The technology transfer process provides the private sector with access to expertise, capabilities, new processes and techniques, and facilities and equipment often not available elsewhere.

Within the Air Force, technology transfer is accomplished in several ways. Intellectual property and access to scientific, engineering and technical support, including AFRL's test facilities and skilled people are provided through various mechanisms such as the Cooperative Research and Development Agreement (CRADA), Education Partnership Agreement (EPA), Commercial Test Agreement (CTA), and Patent License Agreement (PLA). Technology transfer also consists of providing products and services. The products are those produced through specialized manufacturing, repair, and test capabilities. The services provided include technical assistance with manufacturing, repair, and test capabilities.

Academia, industry, and the federal government all realize many benefits from technology transfer activities. CRADAs with private industry and academia improve the knowledge and productivity of government and private-sector employees. These cooperative efforts result in better products for the taxpayer and improve the national economic competitiveness. CRADAs enable partners to reduce costs by leveraging their investments during all stages of Research, Development, Test and Evaluation (RDT&E).

Licensing of patent rights and other intellectual property provides royalty income for laboratories and centers. Within the Air Force, twenty percent of the royalties (up to $150K per year) are paid to the inventor(s) and the balance may be used by the laboratory for certain specific technology transfer purposes such as awards, education, and additional R&D. Government resources provide private industry and academia have access to state-of-the-art technologies, personnel, resources, and specialized equipment not available elsewhere. Assistance to state and local governments establishes the Air Force as a good neighbor and saves taxpayer money. Most importantly, technology transfer is mission enabling for the Air Force. We can leverage our technology investment and work cooperatively with industry and academia to solve common problems. The Air Force Technology Transfer Program is a definite win-win situation.